RECYCLABLE PACKAGING

Part Number 283415

BONTRAGER

Race XXX Lite Road Crankset
Owner's Manual

BONTRAGER™

Race XXX Lite Crankset Owner's Manual

READ THIS MANUAL BEFORE YOU RIDE

Please read this instruction manual thoroughly before using your new Bontrager part; it contains important safety and maintenance information. Also check our web site for further information or updates. If you do not understand the information, or you have a question about this part that this manual does not cover, consult your Bontrager dealer. If you have a question or problem that your Bontrager dealer can't handle, contact us at:

Bontrager Components
Attn: Customer Service
801 W. Madison Street
Waterloo, Wisconsin 53594

920.478.4678
http://www.bontrager.com

In this manual, the Safety Alert Symbol is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

CONTENTS

Conditions for Use

Each Bontrager part is intended to be used in a specific set of conditions. Riding a Bontrager part in a Use Condition that is more stressful (higher number) than that for which it is intended can cause the part to fail. Determine the type of Bontrager part you have purchased, and avoid conditions higher than the intent of your part, as listed below:

	Use Condition	Bontrager part type
	Riding on a paved surface where the tires do not lose ground contact	Race XXX Lite road crankset
	Condition 1 plus smooth gravel roads and improved trails with moderate grades where the tires do not lose ground contact	
	Conditions 1 and 2 plus rough trails, small obstacles, and smooth technical areas, including areas where momentary loss of tire contact with the ground may occur. **NOT** jumping.	Race XXX Lite ATB crankset
	Conditions 1, 2, and 3 plus rough technical areas, moderately sized obstacles, and small jumps.	Race XXX Lite ATB crankset
	Jumping, hucking, high speeds, or aggressive riding on rougher surfaces, or landing on flat surfaces. This type of riding is extremely hazardous and puts unpredictable forces on a bicycle which may overload the frame, crankset, or parts.	Big Earl crankset

INTRODUCTION

The drivetrain consists of the parts of the bicycle that transmit power to the rear wheel:

- Pedals (and toe-clip assemblies on some models)
- Crankset and bottom bracket- left and right crank arms, chainring(s), and bottom bracket (the axle and bearings on which the crankset rotates) (Figure 1)
- Cassette and chain

When the drivetrain is working properly, shifting is easy, your bike is quiet, and its efficiency can reach its maximum. Read and follow the sections that discuss the parts that comprise the drivetrain to make sure all the parts are working properly.

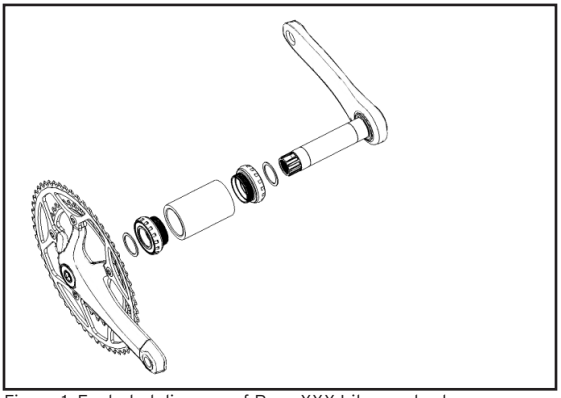

Figure 1 Exploded diagram of Race XXX Lite crankset

Carbon fiber composite

The Bontrager Race XXX Lite crankset is made from OCLV carbon fiber composite. Carbon fiber is among the strongest materials used in bicycle manufacture. However, carbon fiber has unique qualities, different from metal parts, and must be inspected carefully for damage. Follow the inspection procedures in the Maintenance section.

⚠ WARNING

A damaged carbon fiber part can fail suddenly, causing serious injury or death. Inspect a carbon fiber bicycle or parts for damage frequently. If you suspect a carbon fiber part is damaged, immediately stop riding the bicycle. Before riding, replace the part or take the bike to your dealer for service.

MAINTENANCE

Correct maintenance of the crankset and other parts of the drivetrain will make the shift system work better and pedalling smoother, and increase the life of the parts. Maintenance includes Inspection, Lubrication, and Adjustment.

Inspection

Once a month check that the chain is clean, free of rust, and properly oiled. A dirty chain can prematurely wear the chainrings. All links of the chain should pivot smoothly and without squeaking, and no links of the chain should be deformed.

Every 3 months, a more thorough inspection is recommended. Check your chain for wear with a chain wear gauge or a ruler. Each full link of a new chain measures one inch. If 12 links of your chain measures $12^{1/8}$ inches or more, it should be replaced. With good maintenance, a chain usually lasts 1000 to 1500 miles. A worn chain will cause the chainrings of your crankset to wear prematurely. Replacing the chain takes special tools and training and should only be done by your dealer.

Figure 2 Tightening pedals

Tighten the pedals into the crank arms; turn the right pedal clockwise, but the left pedal counter-clockwise (Figure 2):

- Pedals: 350-380 lb•in (40.2-42.9 N•m).

Clean the chainrings and inspect them for damage. If any teeth are bent or broken, have the chainring replaced by your dealer. Note that a few teeth have a special shape to enhance shifting. Also check the bottom bracket adjustment, and tighten the crank bolts:

- Crank bolt (Figure 2): 360-415 lb•in (41-47 N•m)
- Chainring bolts (steel): 70-95 lb•in (7.9-10.7 N•m)
- Chainring bolts (aluminum alloy): 72-80 lb•in (8-9 N•m)

Check the bearings of the bottom bracket. Lift the chain from the chainrings, and rotate the crank so that one of the arms is parallel the seat tube. Put one hand on the crank arm and one hand on the seat tube, and attempt to move the crank arm laterally toward and away from the seat tube. Then spin the cranks. If the crank feels or sounds loose, or if the motion stops abruptly or you hear a grinding noise coming from the bearings, the bearings need to be adjusted or replaced.

Inspect the crankset for fatigue or impact damage:

- Dents
- Cracks
- Scratches
- Deformation
- Discoloration
- Noise

Even if you perform regular inspections, if you exceed the limit of strength of a given part, it may fail if overloaded. After any high force load, thoroughly inspect all the parts of your bike. High force loads include crashes, but you don't have to crash to put a high force load on your bike. For example, hitting a large hole in the road or a sharp bump such as a railroad track can put large forces on your bike.

The manner in which you ride will determine whether your bike and its parts will last. If you ride hard or aggressively, you should replace the bike and/or its parts more often than riders who ride smoothly or cautiously. When evaluating your use of the crankset, there are many variables: weight, speed, technique, terrain, maintenance, riding environment (humidity, salinity, temperature, etc.), and the frame or part itself—so it is impossible to give a precise timetable for replacement. But as a rule, it is better to err on the safe side and replace the bike or parts more frequently. If you aren't sure, ask your dealer.

Unlike metal parts, carbon fiber parts that have been damaged may not bend, bulge, or deform; a damaged part may appear to be normal to a cursory glance. Use the following procedures to inspect carbon fiber parts:

- Check for scratches, gouges, or other surface problems.
- Check the part for loss of rigidity.
- Check the part for delamination.
- Listen for unusual creaking or clicking noises.
  These tests may not be conclusive.

The tests are difficult to describe, so as an aid to describing the tests we provide a movie of inspecting a carbon fiber part in the owner's manual section of the Bontrager web site. If you have any doubts about the integrity of a part, do not ride the bicycle.

Lubrication

Once a month clean and oil the chain. Place a rag behind the chain to avoid getting oil on the rest of the bicycle. Use a synthetic chain lube or similar lubrication. See your dealer for a recommended oil. After oiling your chain, wipe off the excess oil with a rag.

When installing a threaded part, apply a small amount of bicycle grease to the threads, except for aluminum chainring bolts. With aluminum chainring bolts apply a drop of Loctite 222 to the threads.

Adjustment

The bearings in the bottom bracket of the Race XXX Lite crankset are permanently sealed. If the bearings are too tight or loose, follow the instructions in the Installation section. If this does not solve the problem, replace the bearings.

General care and maintenance

This section provides information about general maintenance.

General care and maintenance (cont.)

Re-alignment of the crankset is not possible. Bontrager carbon fiber or aluminum cranksets, and their aluminum dropouts, are not as ductile as steel. Never attempt to make adjustments to a part by bending or twisting it. If the crankset has been damaged, take it to your Bontrager dealer for inspection.

Avoid chemicals or heat. Do not use solvents or harsh chemicals on the crankset, as they can damage the finish and also the adhesive which joins the crankset parts. Excessive heat over 180°F. (82°C.) can also damage the adhesive.

Do not modify the crankset in any way. Modifying the crankset in any way will void the manufacturer's warranty and may be unsafe.

Removing paint from a Bontrager carbon crankset requires special techniques, so should only be done at the Bontrager factory. See your Bontrager dealer for more information.

INSTALLATION

The correct installation of your new Bontrager crankset is critical to your safety, so this work should be performed only by an experienced mechanic. If you are not sure of your ability to correctly install this crankset, have the crankset installed by your Bontrager dealer.

Make sure your crankset is compatible

Before installing this crankset on any bike, check with your dealer or the Bontrager technical service department to ensure that this Bontrager crankset is compatible with your bicycle frame.

This crankset has the following dimensions, which cannot be modified:

- "English" bottom bracket, 1.27 x 24 tpi threading
- 68 mm bottom bracket shell (67.25 to 68.25 mm)
  Italian-threaded cups that fit this crankset are available from Race Face.
- "English" pedals, 9/16 x 20 tpi threading

To install the bearing cups

1. Clean the bottom bracket threads.
2. Firmly snap the bottom bracket sleeve (black plastic) into the right cup.
3. Start the threads of the right cup by hand (Figure 3). The right cup has normal threading.
3. Tighten the right cup to 430 lb•in (17-19 N•m) (Figure 4).
4. Start the threads of the left cup by hand (Figure 5). The left cup has left-hand threads.
5. Tighten the left cup to 430 lb•in (17-19 N•m) (Figure 6).

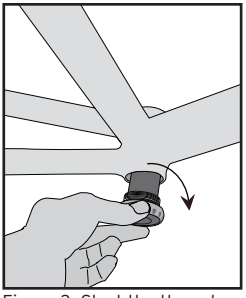

Figure 3 Start the threads of the right cup by hand

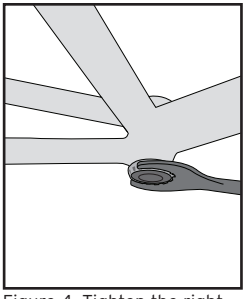

Figure 4 Tighten the right cup

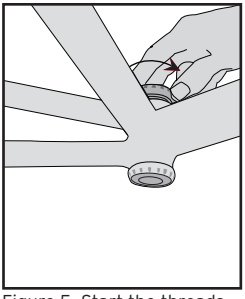

Figure 5 Start the threads of the left cup by hand

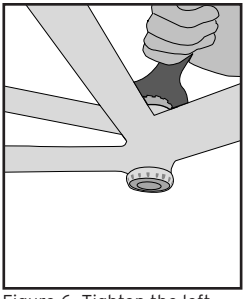

Figure 6 Tighten the left cup

To install the axle

1. Apply a thin film of bicycle grease to the entire axle, including the splines.
2. Slide the elastomer washer (A, Figure 7) and the 1.0 mm spacer (B, Figure 7) onto the axle until they touch the crank.
3. Gently guide the axle through the left cup (Figure 7). Keep the axle centered and aligned.
   If needed to push the axle through, lightly tap the axle end with a plastic mallet.
   Make sure the axle is aligned with the right cup. If misaligned, the axle could damage the bearings.
4. Slide the elastomer washer onto the axle (Figure 8) until it touches the cup.
5. As you hold the right crank at 180 degrees with the left crank (Figure 9), push the crank onto the axle splines. When the crank stops (a shallow distance) turn the axle bolt to start the threads.
6. Tighten the axle bolt until the crank stops, between approximately 360-600 lb•in (34- 68 N•m).

To check the crank for proper installation

Rotate the cranks so that one of the arms is parallel the seat tube. Put one hand on the crank arm and one hand on the seat tube, and attempt to move the crank arm laterally toward and away from the seat tube. Then spin the cranks. Some seal drag is normal, especially with new bearings.

If the crank feels or sounds loose, or if the motion stops abruptly or you hear a grinding noise coming from the bearings, refer to the Troubleshooting chart.

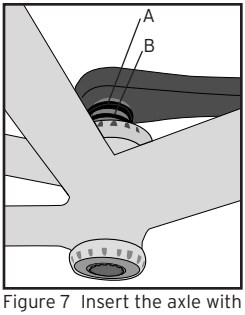

Figure 7 Insert the axle with the washers
A: Elastomer washer
B: 1.0 mm spacer washer

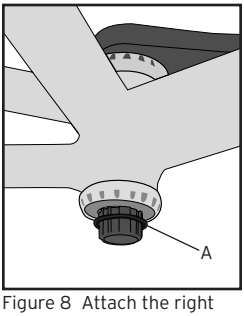

Figure 8 Attach the right elastomer (A)

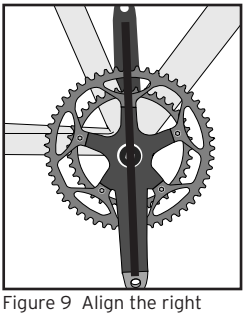
Figure 9 Align the right crank at 180 degrees to the left crank

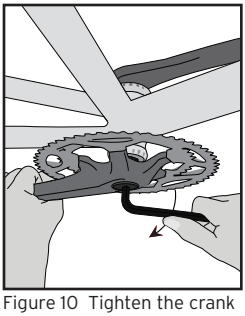
Figure 10 Tighten the crank bolt

TROUBLESHOOTING

Problem	Cause?	Solution
Assembly too tight	• Bottom bracket shell too wide • Bottom bracket shell not faced • Bottom bracket shell threads misaligned • "Stack" of parts is wrong	Face the bottom bracket shell to remove all paint and square the surface. Make sure the bottom bracket shell is within tolerance (see page 6). If shell is faced and tolerance is correct, remove the 1.0 mm spacer and reassemble. If this does not correct the problem, change the stock elastomer washer on the left side to the thinner, 2.5 mm (available as an accessory- see your dealer). *If this assembly is loose, switch back to the standard 3.5 mm elastomer.*
Assembly too loose	• Bottom bracket shell is too narrow • Bottom bracket shell not faced • Bottom bracket shell threads misaligned • "Stack" of parts is wrong	Face the bottom bracket shell to remove all paint and square the surface. Make sure the bottom bracket shell is within tolerance (see page 6). If shell is faced and tolerance is correct, add an additional 1.0 mm spacer (available as an accessory- see your dealer) to the left side and reassemble. *If this assembly is too tight, change the stock 3.5 mm elastomer to a 2.5 mm elastomer, available as an accessory- see your dealer.*
Chain-line incorrect	• Incorrect bottom bracket shell alignment • Incorrect chainrings • Incorrect spacers on axle	If the chain-line is incorrect, shifting performance may be impaired. The 1.0 mm spacers can be moved from side-to-side or removed as necessary, as long as correct bearing adjustment is achieved. The spacer arrangement used in this manual should result in a chain-line of 43.5 mm.

BONTRAGER LIMITED WARRANTY

Bontrager warrants each new Bontrager component or wheelset against defects in workmanship and materials:

For five years-

- All Bontrager components and accessories, except consumables such as tires and inner tubes.

For one year-

- Bontrager consumables such as tires and inner tubes.

This warranty does not cover-

- Normal wear and tear
- Improper assembly
- Improper follow-up maintenance
- Installation of parts or accessories not originally intended for or compatible with the Bontrager fork, components, or wheelsets as sold
- Damage or failure due to accident, misuse, abuse, or neglect
- Labor charges for part replacement or changeover

This warranty is void in its entirety by any modification of the wheelset or components.

This warranty is expressly limited to the repair or replacement of a defective item and is the sole remedy of the warranty. This warranty extends from the date of purchase, applies only to the original owner, and is not transferable. Bontrager is not responsible for incidental or consequential damages. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.

Claims under this warranty must be made through an authorized Bontrager dealer. Proof of purchase is required.

This warranty gives the consumer specific legal rights, and those rights may vary from place to place. This warranty does not affect the statutory rights of the consumer.

Carbon crash replacement policy

Assessing any damage done to a carbon fiber part requires more experience than is needed to inspect metal parts. If you crash or impact your bike and the force of the impact is absorbed by a carbon part, we strongly encourage you to replace the part, even if there are no indications of damage.

If such a crash or impact occurs, Bontrager offers a crash replacement program for carbon parts, substantially reducing any replacement cost. To take advantage of this program, contact us using the information listed in the front of the manual, and ask for the Warranty department.